ABSTRACT OF THE DISCLOSURE

METHOD AND APPARATUS FOR CHARACTERIZATION OF THERMAL RESPONSE OF GMR SENSORS IN MAGNETIC HEADS FOR DISK DRIVES

A method and apparatus for characterization of a thermal response of giant magnetoresistive (GMR) sensors in magnetic read/write heads is provided. The method and apparatus make use of a probe to measure temperatures at a base and a tip of the probe. With the method and apparatus, a temperature of magnetic shields of the read/write head are cooled to a temperature lower than an ambient temperature. A current is then applied to the GMR sensor to increase a temperature of an air bearing surface such that the heat flow through the probe is zero. The amount of current applied, the resistance of the GMR sensor, the magnetic shield temperature, and the ambient temperature are used to calculate a thermal conductance of dielectric material in the read/write head. The thermal conductance is then utilized to estimate the signal to noise ratio of the GMR sensor and determine a maximum bandwidth of the read/write head.